

C. AMBRUSTER.
CIRCUIT BREAKER.
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1,042,186.

Patented Oct. 22, 1912.

FIG. 1.

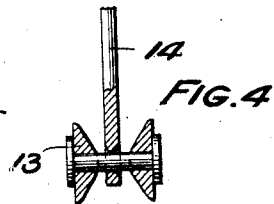
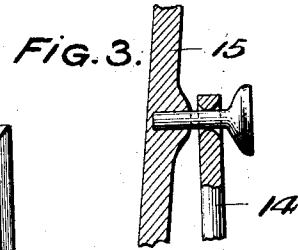
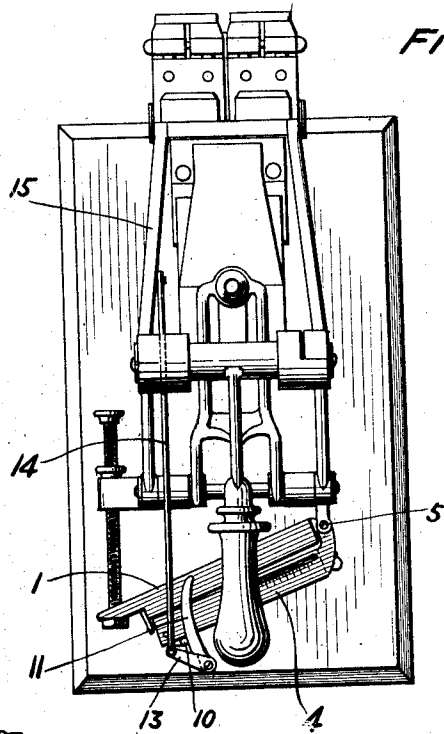
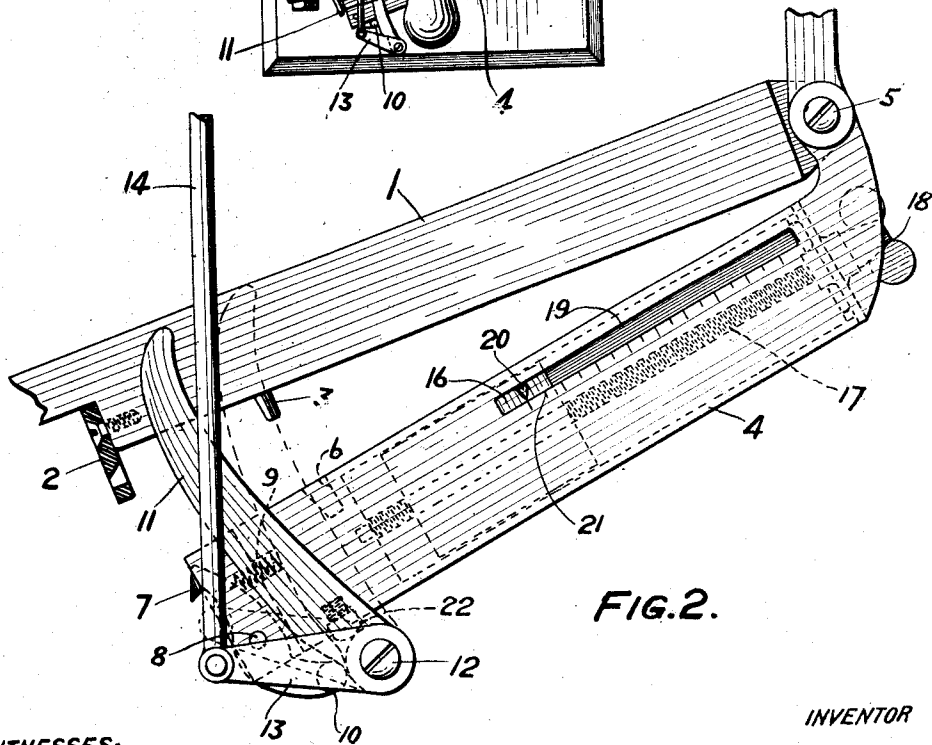


FIG. 2.



WITNESSES:

Robt. H. Kitchel.
Frank E. Hunch

INVENTOR

Cornelius Ambruster
BY
Augustus B. Stoughton
ATTORNEY.

UNITED STATES PATENT OFFICE.

CORNELIUS AMBRUSTER, OF CHICAGO, ILLINOIS.

CIRCUIT-BREAKER.

1,042,186.

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To all whom it may concern:

Be it known that I, CORNELIUS AMBRUSTER, a citizen of the United States, residing at the city of Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Circuit-Breakers, of which the following is a specification.

Objects of the present invention are to provide for immediately changing the setting of a circuit breaker in emergencies to a certain predetermined percentage overload; to provide for previously adjusting this overload to a desired percentage; and to provide for automatically restoring the emergency attachment to inactive position whenever the circuit breaker is opened either manually or by an overload.

The invention will be claimed at the end hereof but will be first described in connection with the embodiment of it chosen for illustration in the accompanying drawings in which—

Figure 1, is a front view of a well known type of circuit breaker shown in closed position and fitted or provided with an attachment embodying features of the invention, Fig. 2, is a similar view drawn to an enlarged scale and illustrating features of the invention, Fig. 3 is a section taken parallel with the plane of the paper and drawn to an enlarged scale and showing one way of connecting the upper end of the link and a movable part of the circuit breaker, and Fig. 4 is a transverse sectional view drawn to an enlarged scale and showing one way of connecting the lower end of the link to one arm of the bell-crank lever.

In the drawings 1, is the tripping armature of the circuit breaker which is shown as of the General Electric type and is well understood.

2, is a latch attached to this armature and the latter is shown as provided with a tapered dowel pin 3.

4, is a hollow shell or carrier as of aluminum pivoted at one end to the pin 5, on which the tripping armature 1, turns.

6, is a tapered recess in the shell which receives the dowel 3. The dowel and recess serve to keep the parts 1 and 4, lined up with each other.

7, is a trigger turning on a pin 8, inserted in a slot in the middle of the end of the shell 4. This trigger 7, engages with the latch 2, when the shell 4, is raised into con-

tact with the armature 1. A spring 9, is shown as arranged behind the trigger 7, for bringing about its engagement with the latch 2. The trigger, as has been said, is pivoted at 8, intermediate of its length. One end engages the latch 2, and the other end is provided with a projection 10, that extends at right-angles to the plane of the trigger so as to be in position for engagement with the arm 11, of a bell crank lever which is pivoted to the stud 12, and the stud 12, is fastened as to the switchboard under the breaker. The other arm 13, of the bell crank lever is arranged near the end of the stud 12, and further out on the stud 12, than is the arm 11, so that the end of the projection 10, is in position for engaging with the edge of the arm 11, but will pass clear of the arm 13.

14, is a link extending from the arm 13, to the arm 15, of the circuit breaker which arm 15, moves downward when the breaker opens. The connection to the arm 15 is shown in Fig. 3 and the connection to the arm 13 is shown in Fig. 4. In each case the edge wall of the opening in the link is rounded so as to provide for sufficient universal motion for accommodating the movement of the parts.

16, is a weight as of lead which can be moved toward or away from the pivot or hinge 5, by turning the screw 17, shown as mounted in the casing 4, and provided with a thumb nut 18.

19, is a slot formed in the casing 4, and through which extends a pointer 20, attached to the weight, and by means of this pointer and the scale 21, the percentage of overload for which the weight 16, is set, can be read.

When the circuit breaker is open, the link 14, brings the bell crank into such position that the edge, that is the lefthand edge, of the arm 11, stands in such position that the projection 10, being forced outward and thus withdrawing the trigger 7, into the shell 4, would travel along it if the shell 4, were raised and maintain the trigger 7, in the same relative position to the shell 4, thus preventing the trigger from engaging the latch. As a result of this construction and arrangement it follows that it is impossible to connect the shell 4, and weight which it carries with the armature 1, when the circuit breaker is open. When the circuit breaker is closed, the link 14, brings the bell crank into a position indicated

by dotted lines and in this position the edge of the arm 11, clears the projection 10, so that the trigger is free to engage the latch when the shell 4, is turned up. As a result of this construction the shell 4, and its weight can be connected with the armature 1, when the circuit breaker is closed by the simple operation of turning the casing upward. When the shell 4, is hung on the armature 1, there is given an overload setting dependent upon the proportion of the moments of the armature and of the weight and shell about the hinge 5. This proportion can be altered or adjusted by turning the screw 17, and moving the weight 16, in and out. Whenever the circuit breaker is opened either by an overload or by hand, the link 14, moves the bell crank into position for bringing its arm 11, in contact with the projection 10, thus tripping the trigger and disengaging the shell and weight from the armature 1, and allowing the shell and weight to fall back onto the stud 12, into inactive position. 22, is a rubber button for cushioning this blow. As the left-hand surface of the arm 11, when the breaker is open follows an arc of a circle about the point 5, as a center, the trigger will be tripped no matter what the position of the shell 4, may be. the radius of said arc being of such length as to force the projection 10, of the trigger outward and thus withdraw the trigger 7, into the shell 4, so that said trigger cannot engage with the latch 2. This enables the armature of the circuit breaker to be set at any point within the range of the breaker without having to make any adjustments of the emergency attachment.

There are conditions usually caused by a breakdown which necessitates the emergency use of a piece of apparatus such as a storage battery at a much higher rate than the circuit breakers are set to carry. The present invention provides a means for attaching during such emergency time an extra weight to the tripping armature of the circuit breaker so that the circuit breaker will not trip at its usual point but at a point above which the apparatus would be endangered. Furthermore the emergency attachment of the present invention can be previously adjusted to limit the overload capacity and this emergency attachment is automatically restored to inactive position whenever the circuit breaker is opened either by hand or by an overload, thus rendering the device what might be called fool-proof.

What I claim is:

1. The combination with a circuit breaker having a tripping armature and a part which moves when the breaker opens, of a member for increasing the weight of the armature, a catch by means of which said member may be attached to and disconnected

from the armature, and tripping means operated by said part and adapted to unfasten the catch when the circuit breaker is open or opens.

2. The combination of a circuit breaker having a pivotal tripping armature and a part which moves when the breaker opens, a member pivoted concentrically with the armature, a catch for connecting and disconnecting the free ends of the armature and member, and tripping mechanism connected with said part and adapted to unfasten said catch when the breaker is open or opens and to permit of its fastening when the breaker is closed.

3. The combination of a circuit breaker having a pivotal tripping armature and a part which moves when the breaker opens, a member pivoted concentrically with the armature, a catch for connecting and disconnecting the free ends of the armature and member, tripping mechanism connected with said part and adapted to unfasten said catch when the breaker is open or opens and to permit of its fastening when the breaker is closed, and a weight adjustably carried by said member.

4. The combination of a circuit breaker having a pivotal tripping armature and a part which moves when the breaker opens, a member pivoted concentrically with the armature, a catch for connecting and disconnecting the free ends of the armature and member, tripping mechanism connected with said parts and adapted to unfasten said catch when the breaker opens and to permit of its fastening when the breaker is closed, a weight adjustably carried by said member, and a scale and pointer for indicating the position of the weight.

5. The combination of a circuit breaker having a pivotal tripping armature and a part which moves when the circuit breaker opens, a pivotal member adapted to be connected with the armature to increase its weight, a stud for supporting said member in inactive position, a catch for connecting and disconnecting the armature and member, a bell crank lever pivoted to the stud, and a link connected with said part and one arm of the bell crank lever and the other arm of said lever operating to unfasten the catch when the breaker is open or opens and to permit the catch to fasten when the breaker is closed.

6. An attachment for circuit breakers comprising a member provided at one end with one element of a pivotal connection and at the other end with a trigger, a latch with which the trigger coöperates, a bell crank lever and means for pivotally supporting it, and a link connected with one arm of the bell crank lever and the other arm of the bell crank lever arranged to coöperate with the trigger.

7. The combination of a circuit breaker having a pivotal tripping armature provided with a latch and a dowel pin, a fixed stud, a shell having one end pivoted concentrically with the armature and provided with an opening for the reception of the dowel pin and adapted to rest on said stud, a spring actuated trigger pivotally mounted in the free end of the shell and adapted to cooperate with said latch and provided with a projection, a bell crank lever pivotally mounted on the stud and having one of its arms adapted to cooperate with said projection, a link connected with the other arm of the bell crank lever and with a movable part of the circuit breaker, and a weight adjustably mounted on the shell.

8. The combination of a circuit breaker having a tripping armature, a member for increasing the weight of said armature, means for manually connecting said member and armature, and additional means for au-

tomatically disconnecting said member and armature when the circuit breaker opens, substantially as described.

9. The combination with a circuit breaker having a tripping armature and a part which moves when the breaker opens, of a device for increasing the weight of the armature, means for attaching the armature and said device, and means responsive to the movement of the said moving part and adapted to permit of the attachment of the device to the armature when the breaker is closed and for automatically detaching the device when the breaker opens substantially as described.

In testimony whereof I have hereunto signed my name.

CORNELIUS AMBRUSTER.

Witnesses:

O. L. HARRISON,
D. M. SIMPSON,
JAMES A. DONNELLY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."